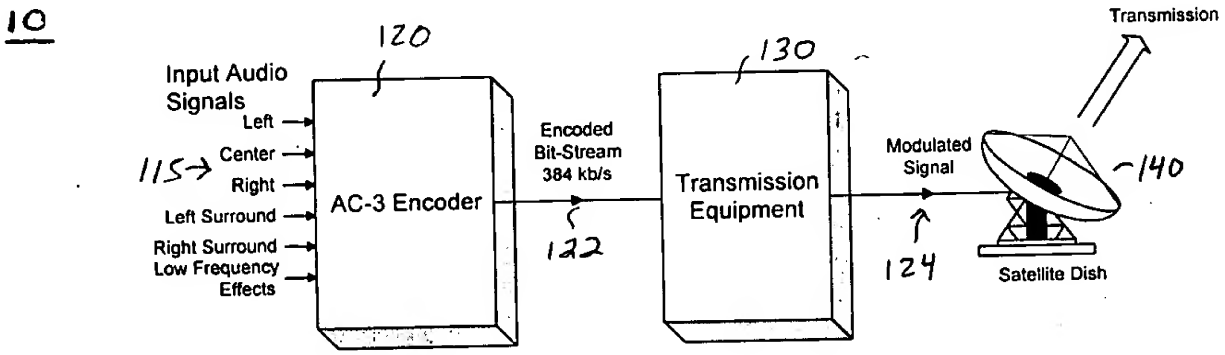
10
120
Input Audio Signals
Left
115
Center
Right
Left Surround
Right Surround
Low Frequency Effects
AC-3 Encoder
Encoded Bit-Stream 384 kb/s
122
130
Transmission Equipment
Modulated Signal
124
Transmission
140
Satellite Dish

FIG. 1A

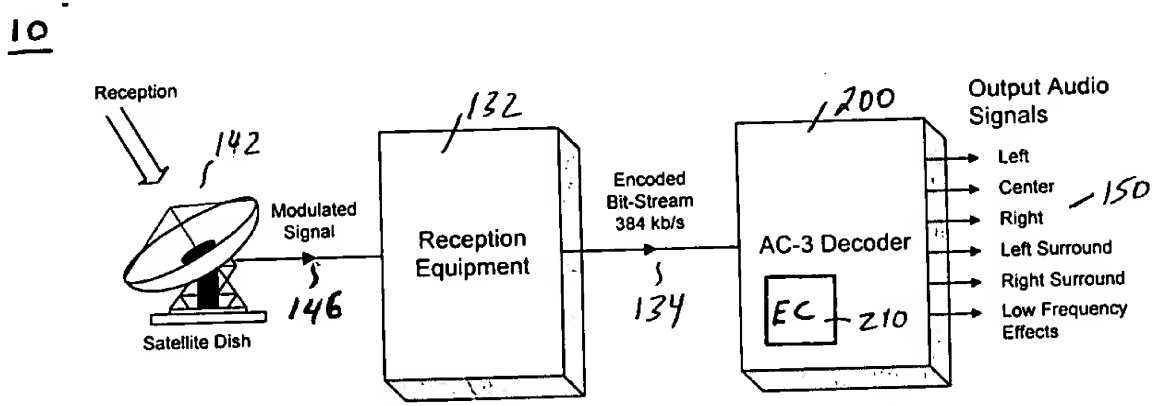
10
Reception
142
Modulated Signal
146
Satellite Dish
132
Reception Equipment
Encoded Bit-Stream 384 kb/s
134
200
AC-3 Decoder
EC
210
Output Audio Signals
Left
Center
Right
Left Surround
Right Surround
Low Frequency Effects
150

FIG. 1B

134

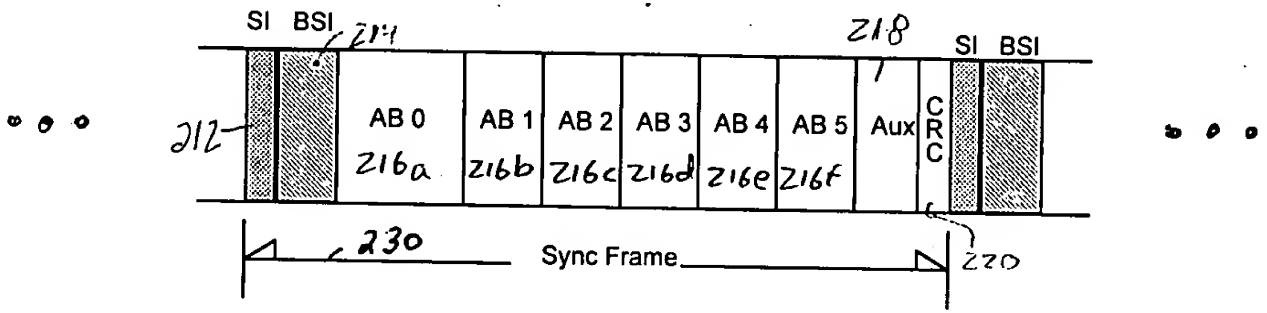
SI
BSI
214
218
SI
BSI
212
AB 0
216a
AB 1
216b
AB 2
216c
AB 3
216d
AB 4
216e
AB 5
216f
Aux
CRC
230
Sync Frame
220

FIG. 2

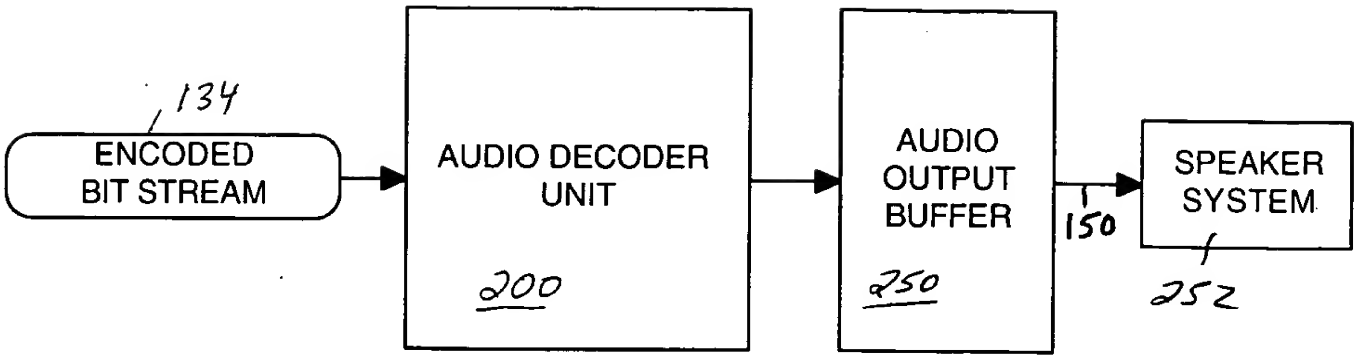
134
ENCODED BIT STREAM
AUDIO DECODER UNIT
200
AUDIO OUTPUT BUFFER
250
150
SPEAKER SYSTEM
252

FIG. 3A

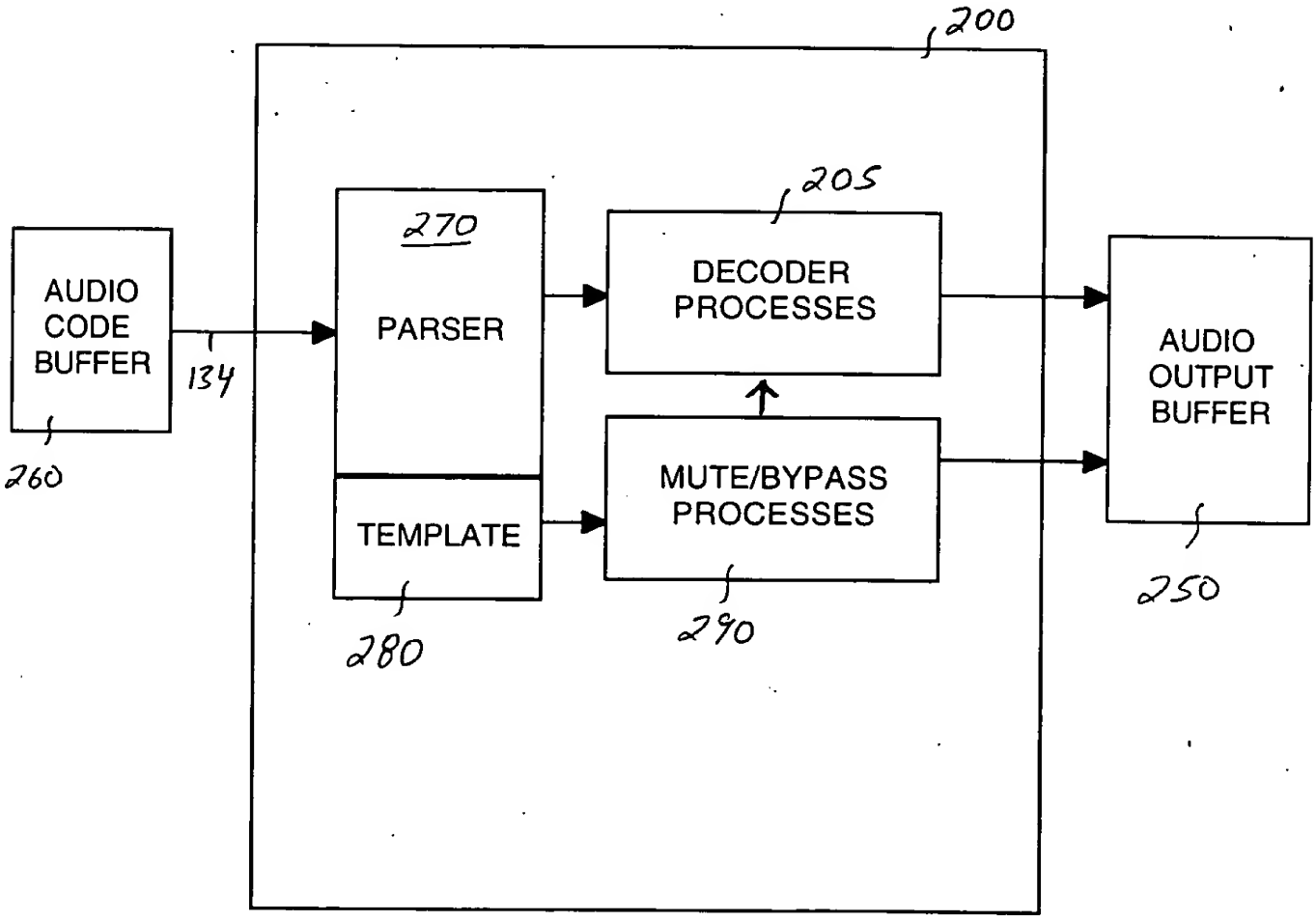
200
AUDIO CODE BUFFER
260
134
270
PARSER
TEMPLATE
280
205
DECODER PROCESSES
MUTE/BYPASS PROCESSES
290
AUDIO OUTPUT BUFFER
250

FIG. 3B

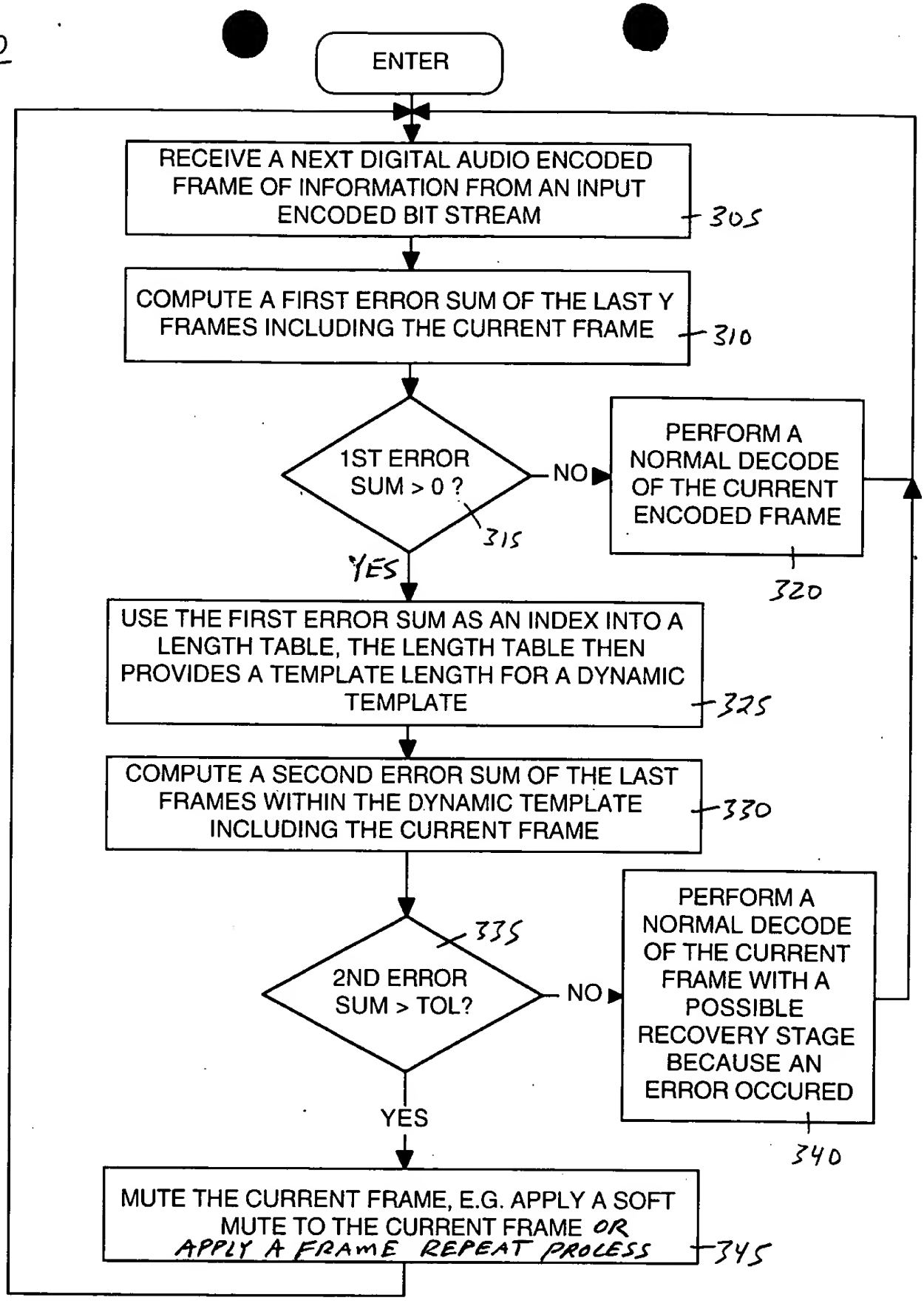
280
ENTER
RECEIVE A NEXT DIGITAL AUDIO ENCODED FRAME OF INFORMATION FROM AN INPUT ENCODED BIT STREAM
305
COMPUTE A FIRST ERROR SUM OF THE LAST Y FRAMES INCLUDING THE CURRENT FRAME
310
1ST ERROR SUM > 0 ?
315
NO
PERFORM A NORMAL DECODE OF THE CURRENT ENCODED FRAME
320
YES
USE THE FIRST ERROR SUM AS AN INDEX INTO A LENGTH TABLE, THE LENGTH TABLE THEN PROVIDES A TEMPLATE LENGTH FOR A DYNAMIC TEMPLATE
325
COMPUTE A SECOND ERROR SUM OF THE LAST FRAMES WITHIN THE DYNAMIC TEMPLATE INCLUDING THE CURRENT FRAME
330
335
2ND ERROR SUM > TOL?
NO
PERFORM A NORMAL DECODE OF THE CURRENT FRAME WITH A POSSIBLE RECOVERY STAGE BECAUSE AN ERROR OCCURED
340
YES
MUTE THE CURRENT FRAME, E.G. APPLY A SOFT MUTE TO THE CURRENT FRAME OR APPLY A FRAME REPEAT PROCESS
345

FIG. 4

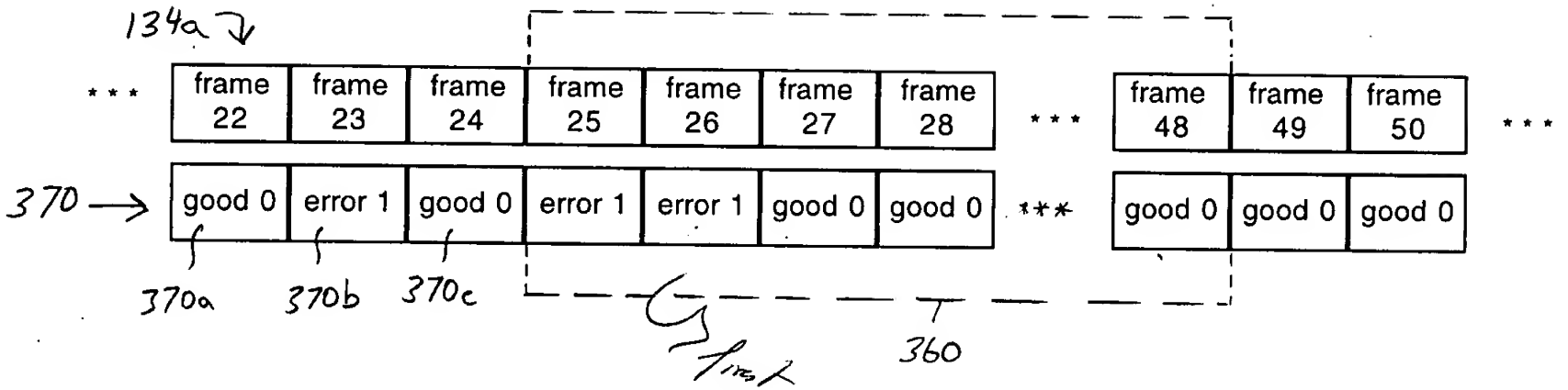
134a
frame 22
frame 23
frame 24
frame 25
frame 26
frame 27
frame 28
frame 48
frame 49
frame 50
370
good 0
error 1
good 0
error 1
error 1
good 0
good 0
good 0
good 0
good 0
370a
370b
370c
360

FIG. 5A

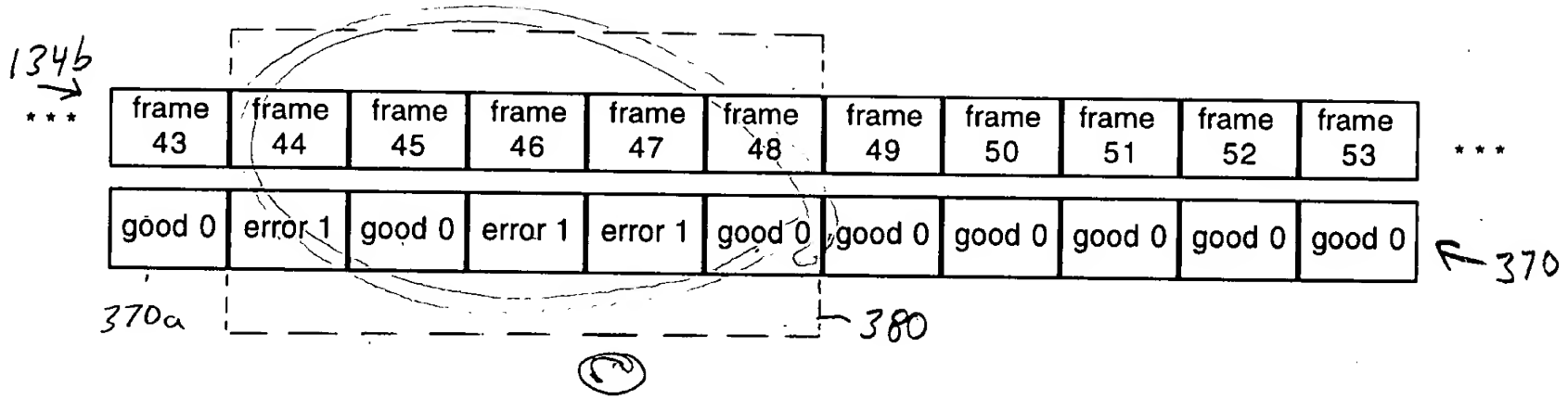
134b
frame 43
frame 44
frame 45
frame 46
frame 47
frame 48
frame 49
frame 50
frame 51
frame 52
frame 53
good 0
error 1
good 0
error 1
error 1
good 0
good 0
good 0
good 0
good 0
good 0
370
370a
380

FIG. 5B

FIG. 6

No. 5505
Engineer's Computation Pad

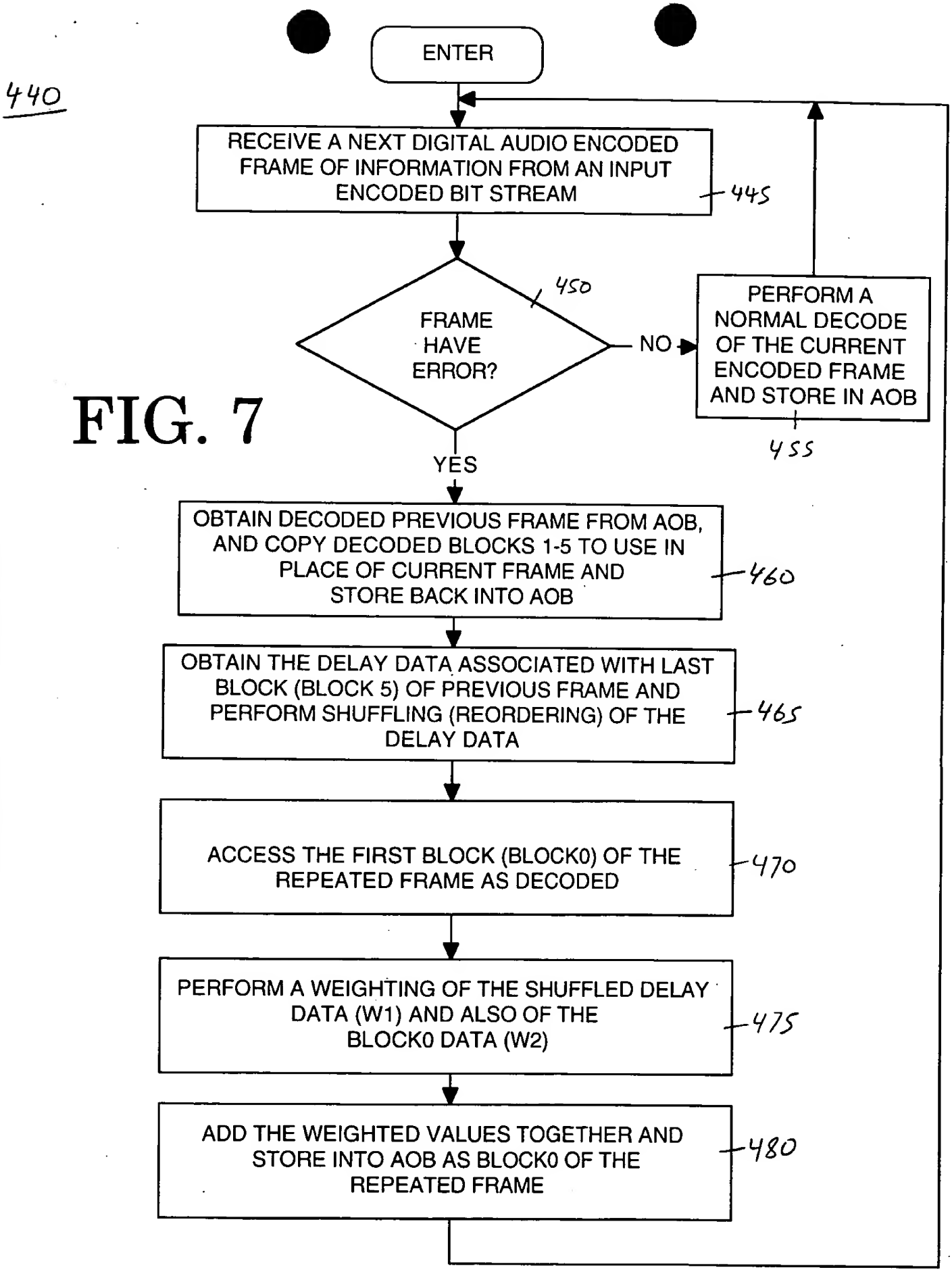
440
ENTER
RECEIVE A NEXT DIGITAL AUDIO ENCODED FRAME OF INFORMATION FROM AN INPUT ENCODED BIT STREAM
445
FRAME HAVE ERROR?
450
NO
PERFORM A NORMAL DECODE OF THE CURRENT ENCODED FRAME AND STORE IN AOB
455
YES
OBTAIN DECODED PREVIOUS FRAME FROM AOB, AND COPY DECODED BLOCKS 1-5 TO USE IN PLACE OF CURRENT FRAME AND STORE BACK INTO AOB
460
OBTAIN THE DELAY DATA ASSOCIATED WITH LAST BLOCK (BLOCK 5) OF PREVIOUS FRAME AND PERFORM SHUFFLING (REORDERING) OF THE DELAY DATA
465
ACCESS THE FIRST BLOCK (BLOCK0) OF THE REPEATED FRAME AS DECODED
470
PERFORM A WEIGHTING OF THE SHUFFLED DELAY DATA (W1) AND ALSO OF THE BLOCK0 DATA (W2)
475
ADD THE WEIGHTED VALUES TOGETHER AND STORE INTO AOB AS BLOCK0 OF THE REPEATED FRAME
480

FIG. 7

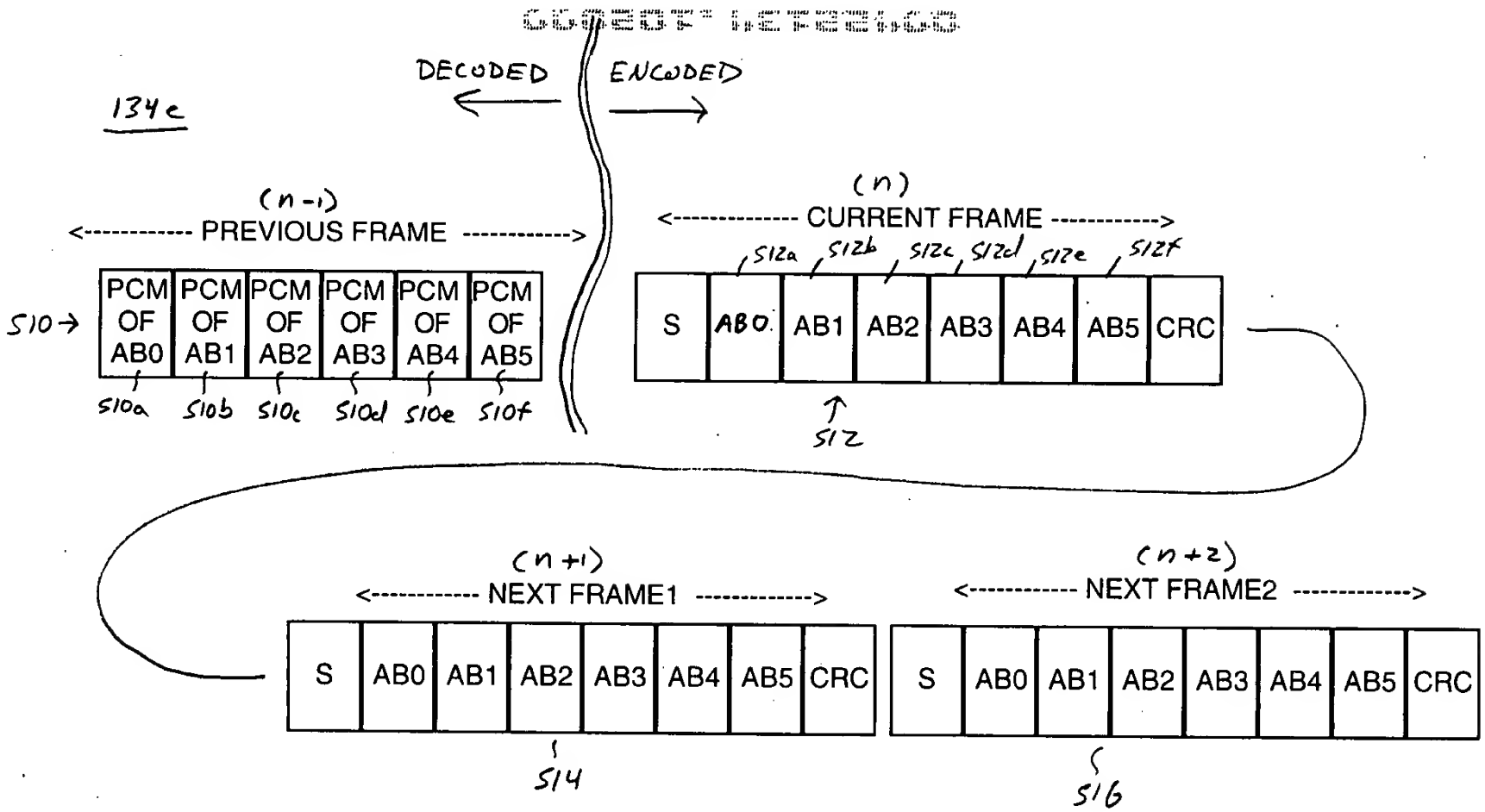
DECODED
ENCODED
134c
(n-1)
PREVIOUS FRAME
(n)
CURRENT FRAME
PCM OF AB0
PCM OF AB1
PCM OF AB2
PCM OF AB3
PCM OF AB4
PCM OF AB5
S10→
S10a
S10b
S10c
S10d
S10e
S10f
S12a
S12b
S12c
S12d
S12e
S12f
S
AB0
AB1
AB2
AB3
AB4
AB5
CRC
S12
(n+1)
NEXT FRAME1
(n+2)
NEXT FRAME2
S14
S16

FIG. 8

Docket No. 1625.1

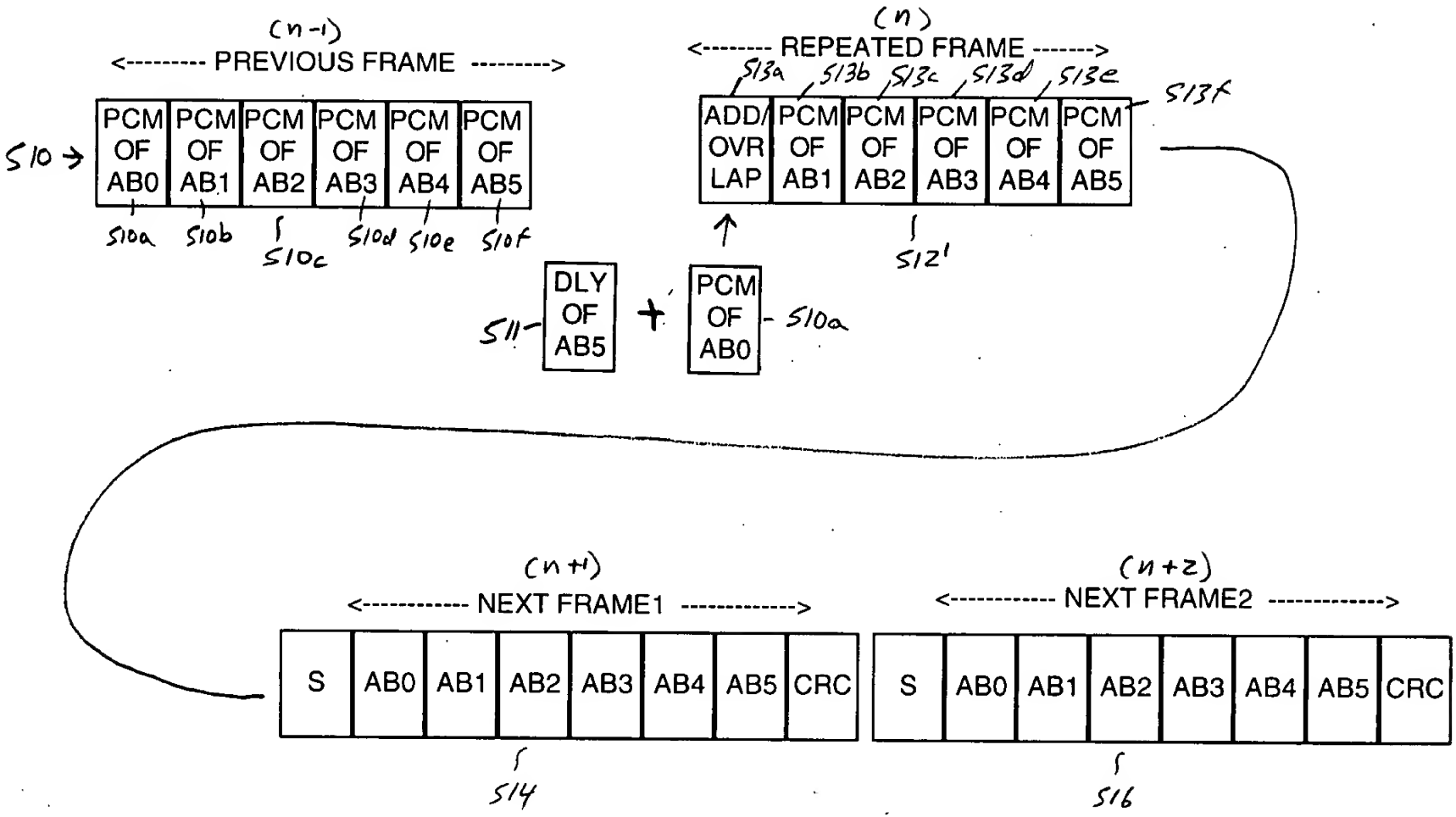

FIG. 9

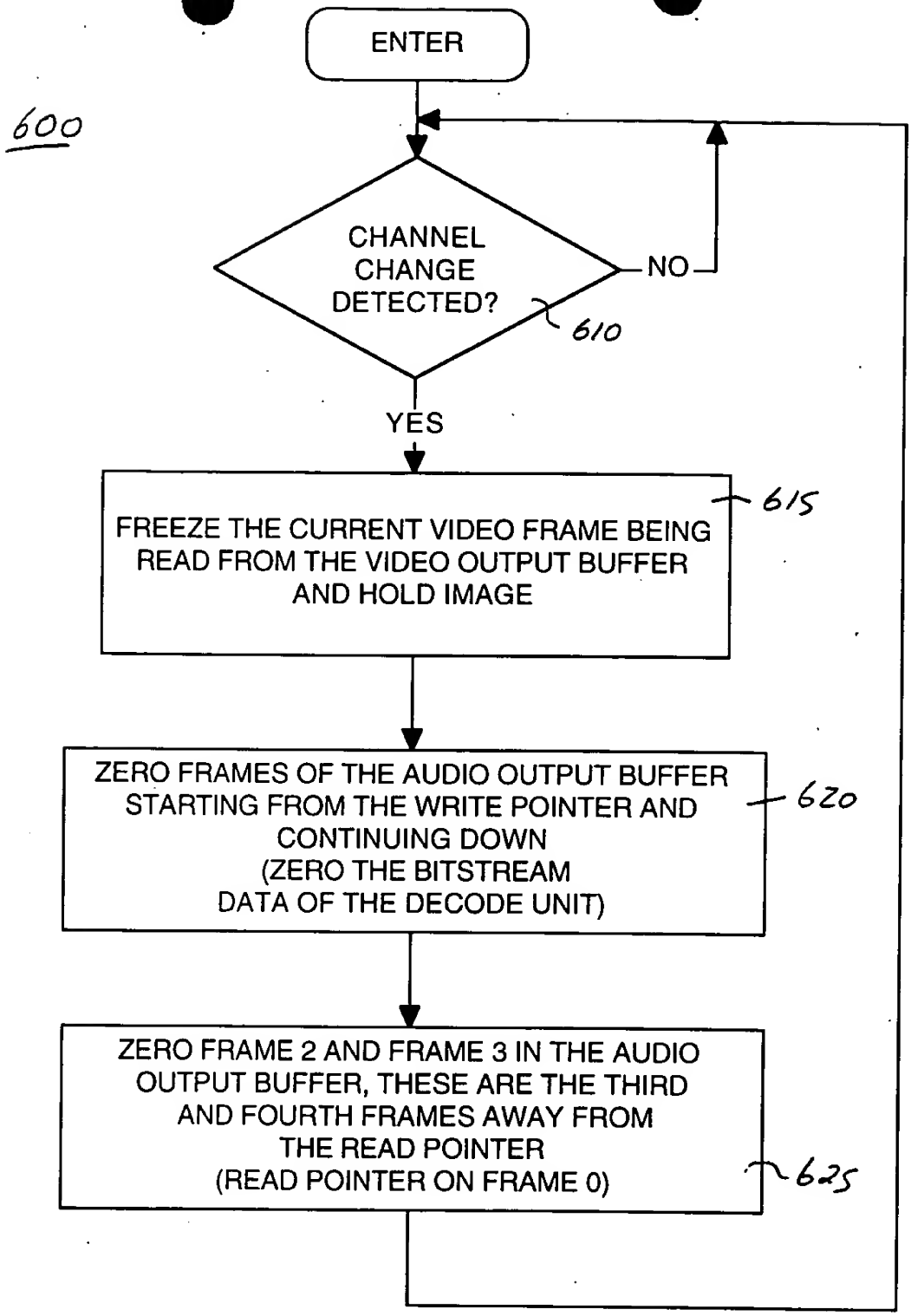
600
ENTER
CHANNEL CHANGE DETECTED?
610
NO
YES
FREEZE THE CURRENT VIDEO FRAME BEING READ FROM THE VIDEO OUTPUT BUFFER AND HOLD IMAGE
615
ZERO FRAMES OF THE AUDIO OUTPUT BUFFER STARTING FROM THE WRITE POINTER AND CONTINUING DOWN (ZERO THE BITSTREAM DATA OF THE DECODE UNIT)
620
ZERO FRAME 2 AND FRAME 3 IN THE AUDIO OUTPUT BUFFER, THESE ARE THE THIRD AND FOURTH FRAMES AWAY FROM THE READ POINTER (READ POINTER ON FRAME 0)
625

FIG. 10

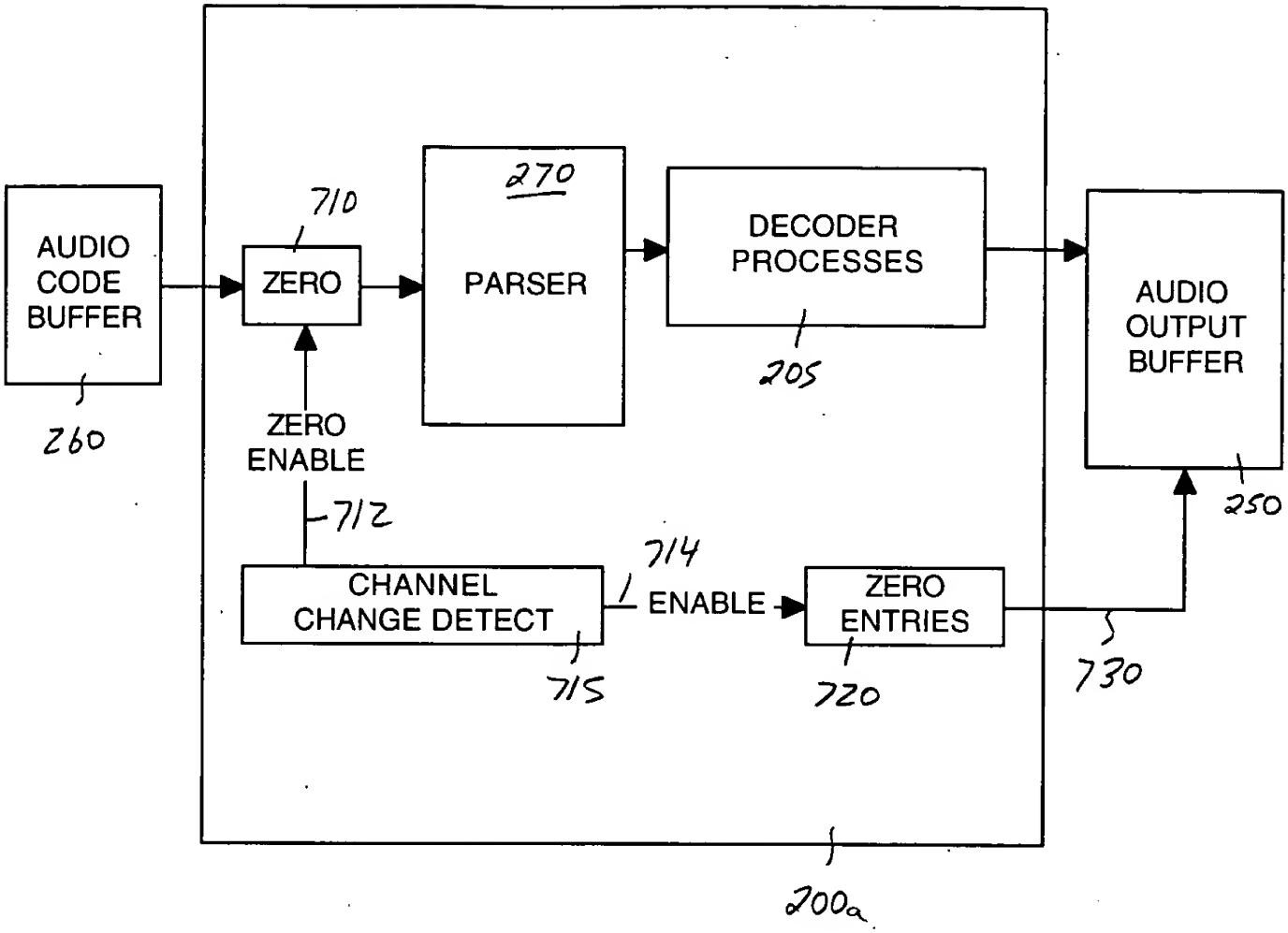
AUDIO CODE BUFFER
260
710
ZERO
270
PARSER
DECODER PROCESSES
205
AUDIO OUTPUT BUFFER
250
ZERO ENABLE
712
CHANNEL CHANGE DETECT
715
714
ENABLE
ZERO ENTRIES
720
730
200a

FIG. 11

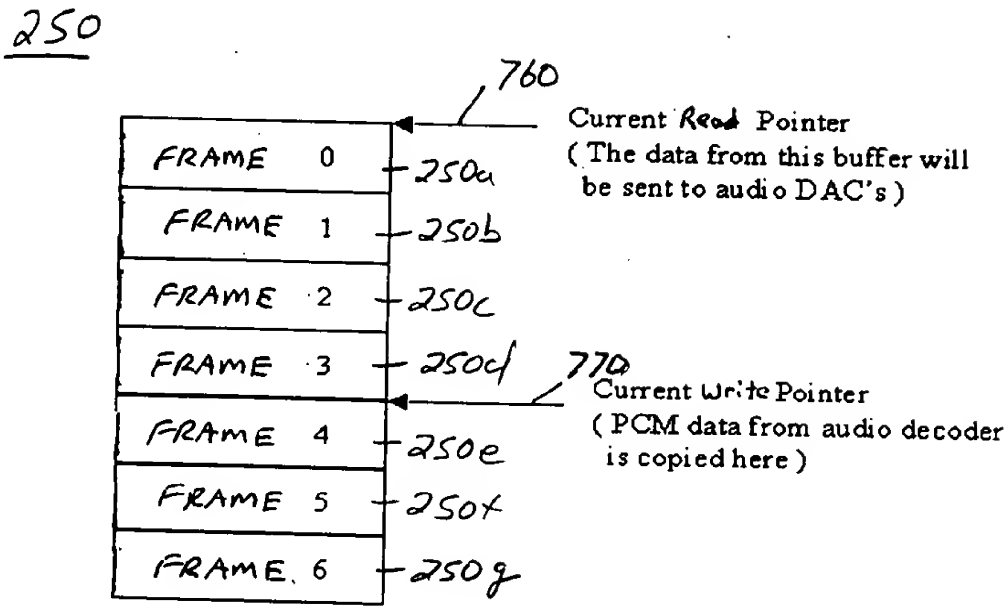
250
760
Current Read Pointer
(The data from this buffer will
be sent to audio DAC's)
FRAME 0
250a
FRAME 1
250b
FRAME 2
250c
FRAME 3
250d
770
Current Write Pointer
(PCM data from audio decoder
is copied here)
FRAME 4
250e
FRAME 5
250f
FRAME 6
250g

FIG. 12

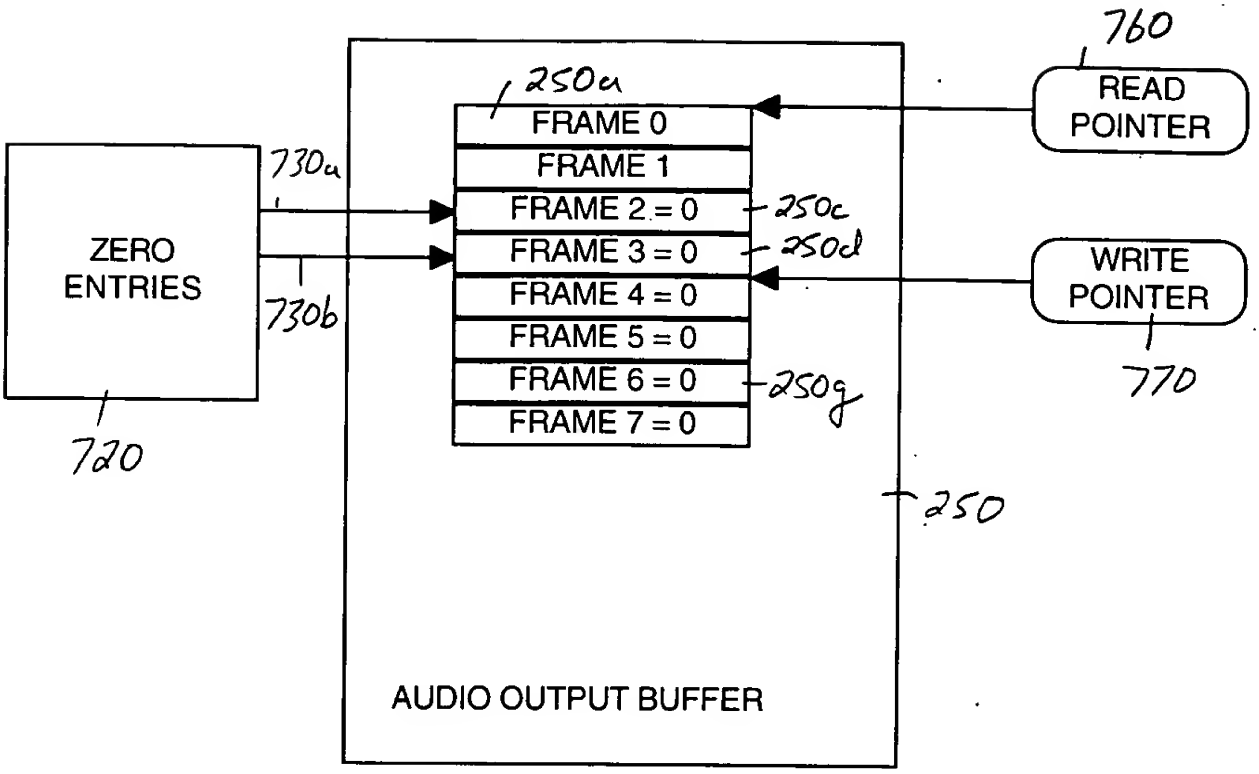
760
READ POINTER
250a
FRAME 0
FRAME 1
FRAME 2 = 0
FRAME 3 = 0
FRAME 4 = 0
FRAME 5 = 0
FRAME 6 = 0
FRAME 7 = 0
250c
250d
250g
730a
730b
ZERO ENTRIES
720
WRITE POINTER
770
250
AUDIO OUTPUT BUFFER

FIG. 13

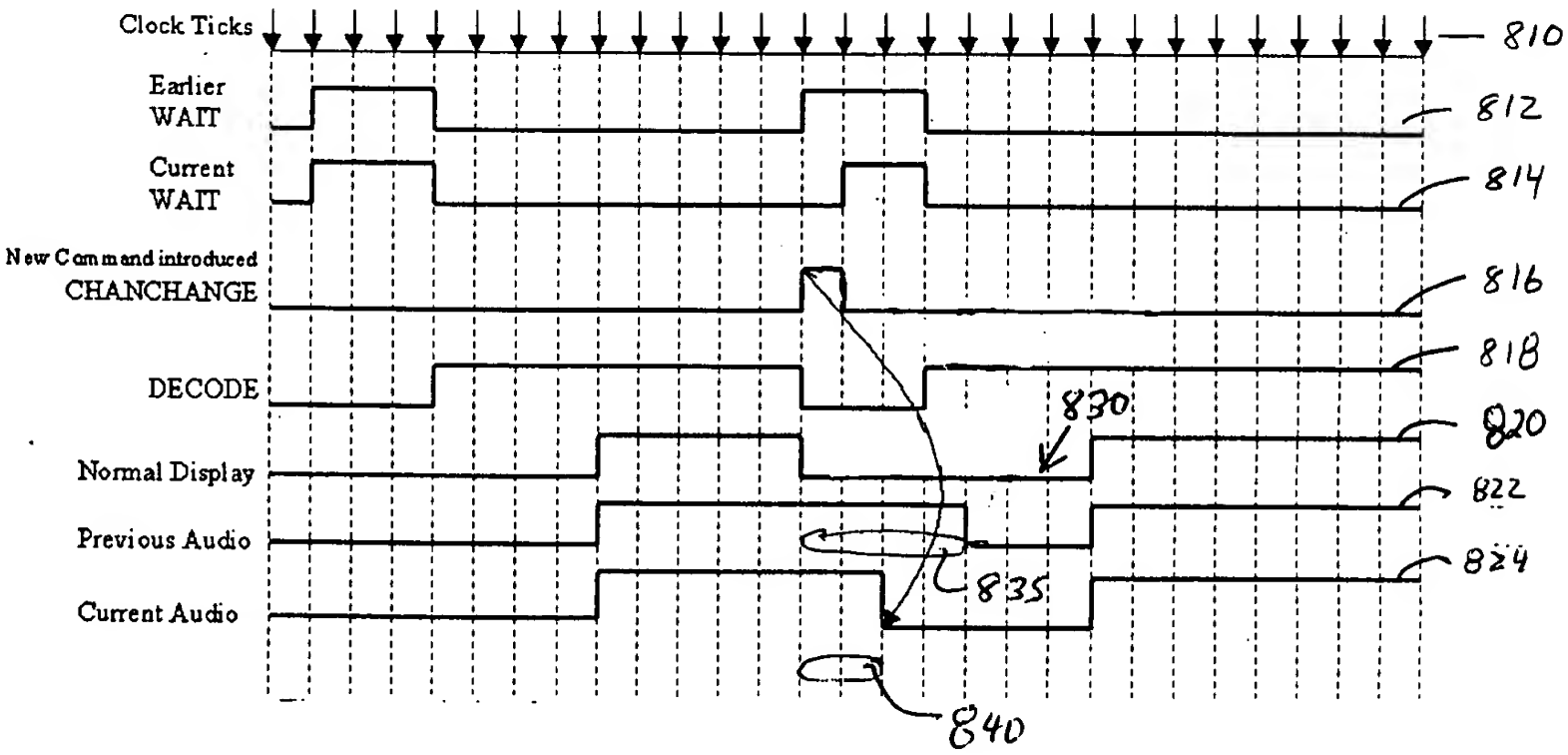
Clock Ticks
Earlier WAIT
Current WAIT
New Command introduced CHANCHANGE
DECODE
Normal Display
Previous Audio
Current Audio
810
812
814
816
818
820
822
824
830
835
840

FIG. 14

Google Patents

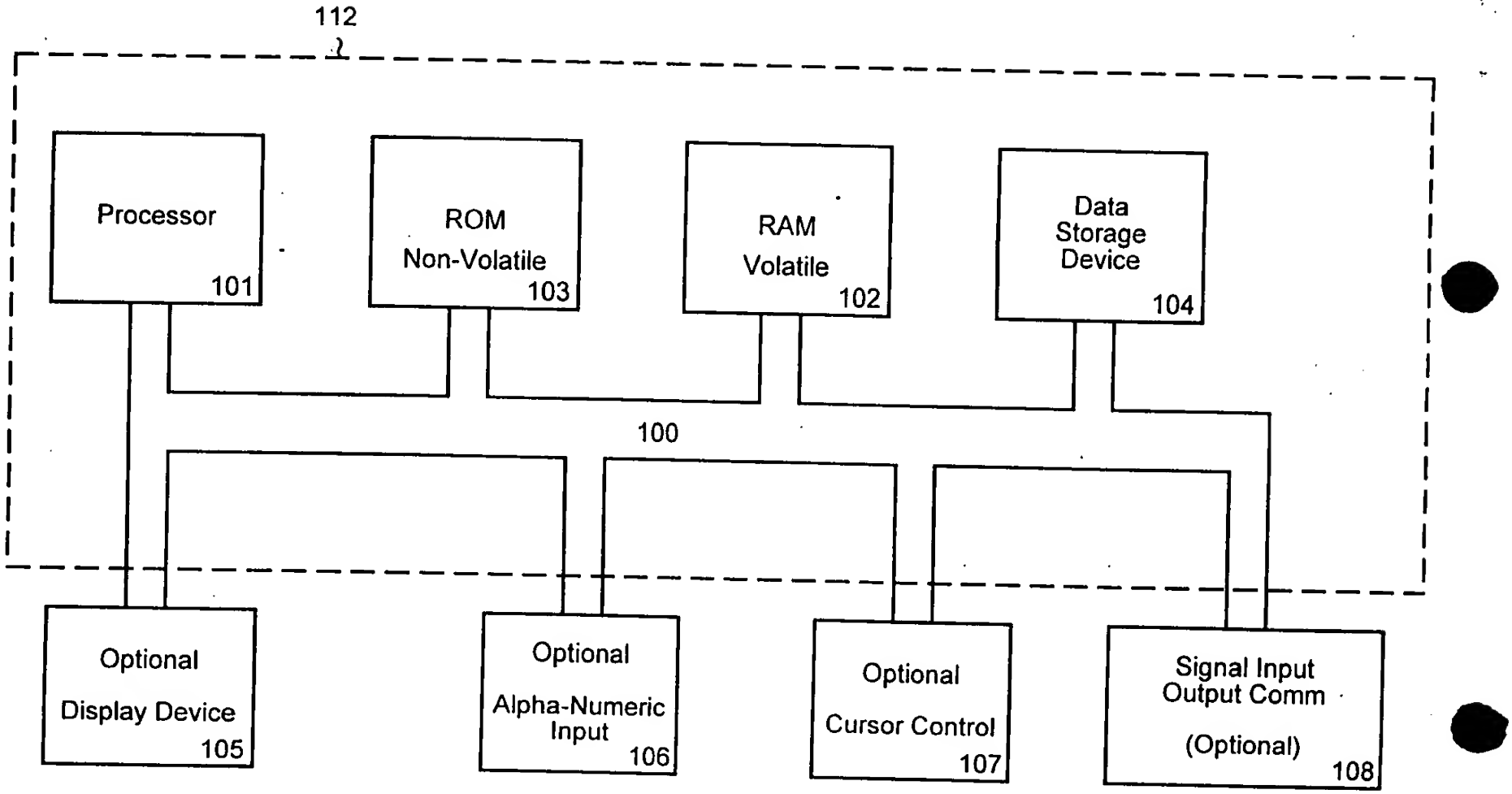

FIG. 15